9355

Diag. Cht. No. 4102 & 4115.

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC Field No. FASO-1-73 Office No. H-9355
LOCALITY
State HAWAII General Locality .SOUTHWEST .COAST-ISLANDOOF HAWAII Locality WEST OF KA LAE
1973 CHIEF OF PARTY C. A. Burroughs.
LIBRARY & ARCHIVES DATE4/1/75

☆U.S. GOVERNMENT PRINTING OFFICE: 1974-763-098

い い い い FORM C&GS-537 (5-66)

U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY

REGISTER NO.

H-9355

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

FA80-1-73

State Hawaii
General locality Southwest Coast - Island of Hawaii
Locality Southwest Coast Wast of Kalac
Scale 1:80,000 Date of survey March April 1973
Instructions dated 15 December 1972 Project No. OPR-419-FA-73
Vessel NOAA Ship Fairweather (MSS-20)
Chief of party Commander Charles A. Burroughs P.D. Anderson, F.G. Arbusto, T.E. Defor, R.D. Hopkins, F.L. Jeffries, J.A. Murphy, D.E. Mortemp, R.C. Part, A.J. Potak, f. P. Ressi, K. H. Undermood, and W.A. Wert Surveyed by Fairweather Personnel
Soundings taken by echo sounder, hand lead, pole Echo Sounder
Graphic record scaled by Fairweather Personnel and Hydroplot System
Graphic record checked by Fairweather Personnel
Protracted by Automated plot by Fairweather Personnel
Soundings penciled by
Soundings in fathoms Keek at MEW MLLW
REMARKS:
applied to state 4/7/75

Descriptive Report to accompany

Hydrographic Survey H-9355 (FA80-1-73, 1:80,000) Computer Sheets FA80-1A-73 and FA80-1B-73 OPR-419-FA-73

NOAA Ship Fairweather (MSS-20)
Commander Charles A. Burroughs, Comdg.

A. Project

This project was a continuation of the Modern Hydrographic Survey of Hawaii Island, Hawaii. The survey was accomplished under OPR-419-FA-73, West Coast of Hawaii Island, State of Hawaii project instructions dated 15 December 1972, and in accordance with the Pacific Marine Center OPORDER.

B. Area Surveyed

The survey is bounded on the north by latitude 19°10'00'N, on the east by longitude 155°56'48 W, on the south by latitude 18°35'00"N, and on the west by longitude 156°28'69 W.

The survey included no shoreline.

TO facilitate computer sheet coverage, the survey was divided into two 20 in. X 54 in. boatsheets, denoted as FA80-1A-73 and FA80-1B-73. Boatsheet FA80-1A-73 covers the northern portion of the survey and is bounded on the south by latitude 18°54' 30'. Boatsheet FA80-1B-73 cobers the southern portion of the survey and is bounded on the north by latitude 18°55' 30".

C. Sounding Vessels

The survey was accomplished exclusively using NOAA Ship Fairweather (MSS-20).

D. Sounding Equipment

The Fairweather employed an EDO fathometer model 333A, S/N 118 in conjunction with an EDO transceiver model 248B, S/N 416, and an EDO Digitrak digitizer model 261C with no S/N.

A TRA corrector of 2.6 fathoms, based on previous lead line comparisons, was used. The echo sounding velocity corrections were determined by one Nansen cast taken in the survey area. Velocity corrections have been abstracted and are appended hereto. For details see Fathometer and Velocity Corrections Report, OPR-419, NOAAS Fairweather, 1973. The depth of soundings made during this survey ranged from approximately 100 fathoms to 2700 fathoms.

E. Smooth Sheet

All data was aquired and plotted by the shipboard Hydroplot system;

discrepancies found and resolved to the best of our capabilities, and the data replotted. All the data has been reduced to the Hydrolog/Hydroplot master tape format for smooth sheet processing by the electronic data facilities at PMC.

F. Control Sections.

The Hastings Raydist DRS system was used to control the survey area. The system was employed in range-range mode. See attached Raydist note for further discussion and details. The northeastern corner of the survey was located in what is termed a Raydist shadow area due to the fact that transmissions from the green Raydist station at South Point traversed landmass which lay between the station and that corner of the survey. The shadow area is bounded on the southwest by the extension of the line drawn from the green Raydist station at South Point tangent to the shoreline along the southwest coast of Hawaii Island. The area extends northeast from this line and ends at the northern and eastern boundaries of the survey. To verify the Raydist positions, three point visual fixes were taken at the ends of each line located in the shadow area. Using the PDP8e computer and program AM-560, the visual fix angles were converted into computed Raydist rates which were then compared with the observed Raydist rates at those points. The comparisons were found to be very close. Control for calibration was obtained using recovered triangulation stations. Two photo-identified signals were also employed for position verification in the shadow area.

G. Shoreline See Review,

The survey did not junction with shoreline. \checkmark

H. Crosslines

Approximately 25% of the hydrography on FA80-1-73 is crosslines. The crossline soundings agreed well with the main scheme hydrography soundings. The agreement is generally within about 0.5%.

I. Junctions See Review.

Comparison with adjacent prior survey RA80-1-72, H9339, shows the present survey to be in excellent agreement with the 1972 survey soundings. Unfortunately, no junctions exist with the adjacent cotemporary survey sheets done during the Spring, 1973 season, thus comparisons made with the adjacent surveys were inconclusive. A possible sounding descrepancy was noted at the approximate location of latitude 19°09'09'N, longitude 155°55'54 W, where a depth of 103 fathoms was measured. The adjacent contemporary survey sheet FA10-2-73, H9357, Shows a deepening trend which would indicate that a deeper sounding should exist at the aforementioned location. Lack of an overlapping junction between the two surveys

precludes a definite conclusion at this time, however the problem could possibly be attributable to fathogram interpretation. For further reference see Miscellaneous.

J. Comparison with Prior Surveys See Region .

No prior survey data was supplied for the area of the survey.

K. Comparison with Chart See Design,

The largest scale chart of the area is C&GS 4115 (N.O. 19040) scale 1:250,000, 9th edition, 13 June 1970, corrected to 24 July 1971. Results of the present survey agree well with the chart.

L. Adequacy of the Survey Son Beriew.

The survey is considered to be marginal in its completeness and adequacy for charting purposes. For further reference see Miscellaneous.

M. Aids to Navigation

No aids to navigation were located within the limits of this $\ensuremath{\checkmark}$ survey.

N. Statistics

O. Miscellaneous

The problems encountered during the survey were due largely to the echo sounding equipment used aboard the ship. From the mechanical point of view, problems arose due to the fact that the ship is equipped with wide beam transducers, which enhance side echos and multiple traces, depending upon sea conditions and the particular bottom configuration at any given time. Such multiple echos make interpretation of the fathogram extremely difficult at times, and, depending upon the experiance of the fathometer operator, can be so misleading as to result in tracking a false bottom as much as an entire 400 fathom scale away from the depth of the true bottom. From the operator point of view, the ship's survey personnel were largely unfamiliar with the particular echo sounding gear which was used. Until familiarity increased, the result was mistakes in

following the proper trace and changing scales. The above mentioned problems made it necessary to discard some of the data aquired during the survey. The remaining survey data which appears on the smooth boatsheet seems to be continuous and agrees well with other sources of hydrographic data. For this reason it is deemed complete but marginal for charting, as it lacks somewhat in quality.

P. Recommendations See Review

The remainder of boatsheet FA80-1-73 should be surveyed in order to complete the survey area. Care should be taken to insure proper overlapping junctions with the adjacent survey sheets.

Q. References to Reports

Fathometer and Velocity Correction Report, OPR-419, NOAA Ship Fairweather, 1973.

Horizontal Control Report, OPR-419, NOAA Ship Fairweather, 1973.

Respectfully Submitted,

Ronald C. Pate Ensign, NOAA Reference tide gage for this project was at Honolulu, Oahu, Hawaii. Field tide reducers, generated by PDP8/e computer using program AM 500, were based on predicted tides at Napoopoo, Island of Hawaii.

Four Bristol Bubbler tide gages were installed in the project area. Locations and periods of operation are as follow:

Napoopoo	Lat. Long.	19°28.6'N 155°55.3'W	22	Feb -	12	Apr	1973
Honaunau Bay	Lat. Long.	19°25.7'N 155°55.0'W	. 06	Mar -	21	Mar	1973
Milolii	Lat. Long.	19°11.3'N 155°54.6'W	23	Feb	12	Mar	1973
Okoe Bay	Lat. Long.	19°09.2'N 155°54.8'W		Mar -	12	Apr	1973

Honaunau Bay and Okoe Bay gages operated on 135° W time for the entire period of observations. The Milolii gage operated on 150° W time up to 1540, 29 March at which time it was changed to 135° W time zone.

Napoopoo - Gage S/N 63A17969

This gage was provided and installed by Pacific Tides Party prior to arrival of FAIRWEATHER. The gage frequently failed to maintain an accurate time base on the marigram. The sprocket holes in the marigram paper failed to remain engaged with the gage drive sprocket. During the periods in which the paper was not tracking properly it was being advanced at a rate well in excess of that required to properly maintain time. The error was complicated by the fact that occasionally, after the paper had disengaged the drive sprocket it would re-engage at a later but erroneous time. The result was excessive and non-uniform time errors of a magnitude approaching as much as 30 minutes in 6 hours.

Since adequate tidal reduction data was obtained from other gages it was concluded that data records from this gage be rejected.

Honaunau Bay - Gage S/N 63A2925

This was a previously unoccupied site, the gage being placed in operation to provide tidal support for hydrography on FA 5-1-73. The staff and gage were installed and the gage placed in operation on 06 March 1973. Five new bench marks were established and levels run on 06 March. The gage was set to record 0.5 feet higher than the staff. The only irregularity in the marigram resulted from an

attempt to compensate for the effect of swell by adjusting the damping valve. The valve was closed as far as possible and yet allow the gage to track. This resulted in a short interval step type trace rather than a smooth curve trace. The gage was removed and levels rerun on 21 March 1973. Since this gage operated for less than 30 days, it is recommended that the data be correlated to that of the Milolii gage.

Milolii -Gage S/N 67Al0287

This gage was provided and installed by Pacific Tides Party prior to arrival of FAIRWEATHER. This was a previously unoccupied site, the gage placed in operation to provide tidal support for hydrography on sheets FA 5-2-73, FA 10-1-73, and FA 10-2-73. The staff and gage were installed and the gage began operation on 23 February 1973. Three new bench marks were established and levels run on 23 Feb. The gage and staff readings were set to correspond directly. Between 26 and 27 March the staff and orifice hose were destroyed by high surf conditions. A new staff and hose were installed and levels run on 28 March. At this time the gage was set to read 1.6 feet higher than the staff. Excepting the storm damage, this gage performed well throughout its installation with only minor time corrections required for abstracting. The gage was removed and levels run on 12 April 1973.

Okoe Bay - Gage S/N 63A2925

This was a previously unoccupied site and five new bench marks were placed. The gage failed to track any level above about one half the tide range. Information obtained was therefore useless and as such has been rejected. The gage was inteded to support hydrography on sheet FA 5-2-73. Since the Milolii gage was less than 3 miles from Okoe Bay it is recommended that this gage be used to support the Okoe Bay hydrography.

Recommendation

It appears that the damping valve in the 0-10 ft. bubbler tide gage is not adequate to reduce, to a readable state, the trace when a relatively large swell or surge exists. The increase or decrease of pressure due to this swell action caused the trace to exceed, in many instances, 25% of the scale of the marigram, thus making it extremely difficult to abstract the tide curve. This situation can be corrected by housing the orifice in a 4 inch diameter plastic pipe. This pipe must extend below the lowest anticipated water level and above the surface at all times. It must be open to the air at the top and have several small holes near the bottom to allow water to enter the pipe. The scheme is similar to that used in the installation of an ADR tide gage except that instead of having the pipe house a float it would house the bubbler gage's orifice. This would greatly dampen the oscillations caused by swell.

SOUND VELOCITY CORRECTOR ABSTRACT

The following sound velocity correctors are to be applied to soundings on sheets FA 10-1-73 (H-9356), FA 10-2-73 (H-9357), and FA 80-1-73 (H-9355).

DEPTH ftm	CORRECTOR ftm	DEPTH ftm	CORRECTOR ftm
0.0- 1.5	+0.0	110.2-120.5	
	+0.0		+5.5
1.6- 3.5	+0.1	121.0-134.0	+6.0
3.6- 5.5	+0.2	134.5-148.0	+6.5
5.6- 7.5	+0.3	148.5-173.0	+7.0
7.6- 9.5	+0.4	174.0-227.0	+8.0
9.6- 11.5	+0.5	228.0-287.0	+9.0
11.6- 13.5	+0.6	288.0-345.0	+10.0
13.6- 15.5	+0.7	346.0-415.0	+11.0
15.6- 17.5	+0.8	416.0-485.0	+12.0
17.6- 19.5	+0.9	486.0-567.0	+13.0
19.6- 21.5	+1.0	568.0-625.0	+14.0
21.6- 23.5	+1.1	626.0-790.0	+16.0
23.6- 25.5	+1.2	791.0-905.0	+18.0
25.6- 27.5	+1.3	906.0-1012	+20.0
27.6- 29.5	+1.4	1013-1140	+22.0
29.6- 31.5	+1.5	1141-1250	+24.0
31.6- 33.5	+1.6	1251-1350	+26.0
33.6- 38.8	+1.8	1351-1430	+28.0
39.0- 42.8	+2.0	1431-1500	+30.0
43.0- 47.0	+2.2	1501-1560	+32.0
47.2- 51.0	+2.4	1561-1620	+34.0
51.2- 55.0	+2.6	1621-1670	+36.0
55.2- 59.0	+2.8	1671-1720	+38.0
59.2- 63.0	+3.0	1721-1770	+40.0
63.2- 67.0	+3.2	1771-1820	+42.0
67.2- 71.0	+3.4	1821-1900	+44.0
71.2- 75.0	+3.6	1901-2010	+48.0
75.2- 79.0	+3.8	2011-2120	+52.0
79.2- 83.0	+4.0	2121-2220	+56.0
83.2- 87.0	+4.2	2221-2320	+60.0
87.2- 91.0	+4.4	2321-2430	+64.0
91.2- 95.0	+4.6	2431-2530	+68.0
95.2-100.0	+4.8	2531-2640	+72.0
100.2-105.0	+5.0	` 2641-2740	+76.0
105.2-110.0	+5.2		

```
000015 0 0000 0001 000 000000 000000
000035 0 0001
000055 0 0002
000075 0 0003
000095 0 0004
000115 0 0005
000135 0 0006
000155 0 0007
000175 0 0008
000195 0 0009
000215 0 0010
000235 0 0011
000255 0 0012
000275 0 0013
000295 0 0014
000315 0 0015
000335 0 0016
000388 0 0018
000428 0 0020
000470 0 0022
000510 0 0024
000550 0 0026
000590 0 0028
000630 0 0030
000670 0 0032
000710 0 0034
000750 0 0036
000790 0 0038
000830 0 0040
000870 0 0042
000910 0 0044
000950 0 0046
001000 0 0048
001050 0 0050
001100 0 0052
001205 0 0055
```

the production of the second

. Tabliga (1917) Albanda (1918) Perinda ang kalanda (1918) Albanda (1918)

TRANSDUCER & INITIAL CORRECTORS

BOATSHEET FA 80-1-73 LAUNCH SHID FAIRWEATHER

DAY #	COMPUTER SHEET #	BEGINNING TIME	BEGINNING POS. #	TRA CORR.	INITIAL CORR.	TOTAL CORR.
086	FA 80-1-73	10 31 59	0001	+ 2.6	0.0	+ 2.6
087	FA 80-1-73	10 22 30	0034	+ 2.6	0.0	+ 2.6
088	FA 80-1-73	09 52 27	0070	+2.6	0.0	+2.6
94 4095	FA 80-1-73	11 32 10	0105	+2.6	0.0	+2.6
100	FA 80-1-73	10 35 58	0301	+2.6	0.0	+2.6
101	FA 80-1-73	10 43 39	0323	+2.6	0.0	+2.6
			<u>.</u>			
	· · · · · · · · · · · · · · · · · · ·					
	,					
		1			•	
			: <u> </u>			
		ł !	·			
		:			,	
		:				

ELECTRONIC CORRECTORS

BOATSHEET FR-80-1-77 LAUNCH SHIP

					
DAY #	COMPUTER SHEET #	BEGINNING TIME	BEGINNING POS. #	PATTERN I CORRECTOR	PATTERN II CORRECTOR
086	FA-80-1-73	10 31 59	0001	-0-17	-0.08
087	FA-80-1-73	10 22 30	0034	-0.19	+0.01
087	FA-80-1-73	12 48 31	0053	+1.82	+0.01
087	FA-80-1-73	13 29 43	0056	+55.81	+0.01
088	FA-80-1-73	09 5229	0070	+ 0.18	+0.10
094	FA-80-/-73	-	0105	+0.01	+0.08
094		19 34 45	0153	+0-/2	+0.21
095		17 0508	0295	+0.25	+0.23
100		10 35 58	0301	-0.10	+0.18
100	*	14 03 18	03/4	-0.10	+1.18
101				+0.13	-0.05
707	PH-80-1-13	10 43 39	<u> </u>	7075	<i>5,</i> 05
)			
		,			
					:
		·			
				<u> </u>	
		··· - ··· · · · · · · · · · · · · · · ·			
				1	ļ

PATA IDENTIFICATION======TIME MERIDIAN 350 W

REGISTRY # 49355 TAPE # 80-1-TRA

FIELD # FA 80-1-73

TYPE OF DATA TRA COMMECTION /TABLE INDICATOR

SOUNDING VESSEL 5HIP HULL # 2020.

JULIAN DAY 036 FROM POS# TO POS#

9495,100,101

Signal Tape Calibration Signals FA80-1-73 OPR-419

Signal #	Latitude	Longitude	Type	Name/T-#
068	19 12 2742	155 54 2574	Photo-Ident.	T-12551
069	19 12 2147	155 54 3225	Photo-Ident.	T-12551
300	19 11 2527	155 54 3627	Triangulation	Kapukawaa
301	19 09 3325	155 55 0481	Triangulation	Hanamalo 2
302	19 08 1560	155 54 5243	Triangulation	Ohepuupuu
303	19 07 4916	155 55 0899	Triangulation	Niuou
304	19 04 5758	155 54 1283	Triangulation	Kamoi
305	19 02 1334	155 52 5378	Triangulation	Kauna Point (Foundation of former light)

RAYDIST NOTE

Hastings-Raydist electronic positioning equipment was used to control ship hydrography (Sheet FA 80-1-73) during this project. Two shore stations and a mobile ship station were utilized in a range-range configuration.

The "red" shore station was located at Loa Point, latitude 19° 24' 03.579" N. and longitude 155° 54' 47.770" W. over triangulation station "LAE LOA 1884" reference mark #1. The "red" station antenna consisted of two 10-foot sections of triangular aluminum tower and a 30-foot telescopic whip antenna. The ground plane consisted of twelve 50-foot sections of 24-inch wide, 1-inch mesh chicken wire connected to and radiating from the base plate. Electrical power was supplied by 12-volt batteries connected in series-parallel to yield 24 volts. Remote on-off switches were utilized to prolong battery life.

The "green" station was located at South Point, latitude 18° 54'
58.772" N and longitude 155° 41' 07.998" W over triangulation
station "KA LAE 2 1948". The antenna was as described for the "red"
station except that 4 tower section were used and 16-gauge copper
wire was used for the ground plane.

The correct location of KALAE 2 048-49
in 14.18° 54'56.570, long. 155°41'04.290 at time of swang.

Shipboard equipment consisted of a Raydist navigator, transmitter, see Review. and strip chart recorder. A 35-foot fiberglass whip antenna mounted atop the foremast served the system. Raydist navigational information was input directly to the Hydroplot system.

Calibration of Raydist navigator was accomplished by three-point fix procedure using a check angle. All calibration signals used were located over existing triangulation stations. Three-point fixes were converted to Raydist lane count equivalent by PDP8/e using program AM 560.

The Raydist navigator was generally calibrated to within 0.2 lanes. Daily corrections were determined by averaging the beginning and end of day correctors as determined by calibration. In cases of lane loss, interim correctors equivalent to the amount of loss were applied as soon as practicable after detection. A lane loss of 55 lanes resulted from a defective shipboard transmitter at one point. The loss was resolved by inspection of the strip chart and the corrector applied. The end of day calibration substantiated the accuracy of the corrector.

With the exception of the difficulty cited above, performance of the Raydist was quite good. Signals were successfully carried out to 52 nautical miles with no difficulty. An intervening land mass projected between the "green" station and a relatively small portion of the survey area. Visual fix land ties were made at the inshore ends of lines in this "Shadow" area and signal distortion was found to be minimal. The Raydist position data was accepted for the area.

An abstract of Raydist correctors is included herewith. Calibration — and strip chart records are included in the field data package.

Base Stations - Model AA-60

"Green" station S/N 15 Frequency 1653.425 Khz

"Red" station S/N 14 Frequency 1653.015 Khz

Mobile Transmitter - Model TA-96.
Transmitter S/N 20 Frequency 3306.45 Khz

Navigator - Model ZA-67A S/N 26 "red" freq. filter 435 hz "green" filter 470 hz S/N 47 " " 385 hz " " 350 hz

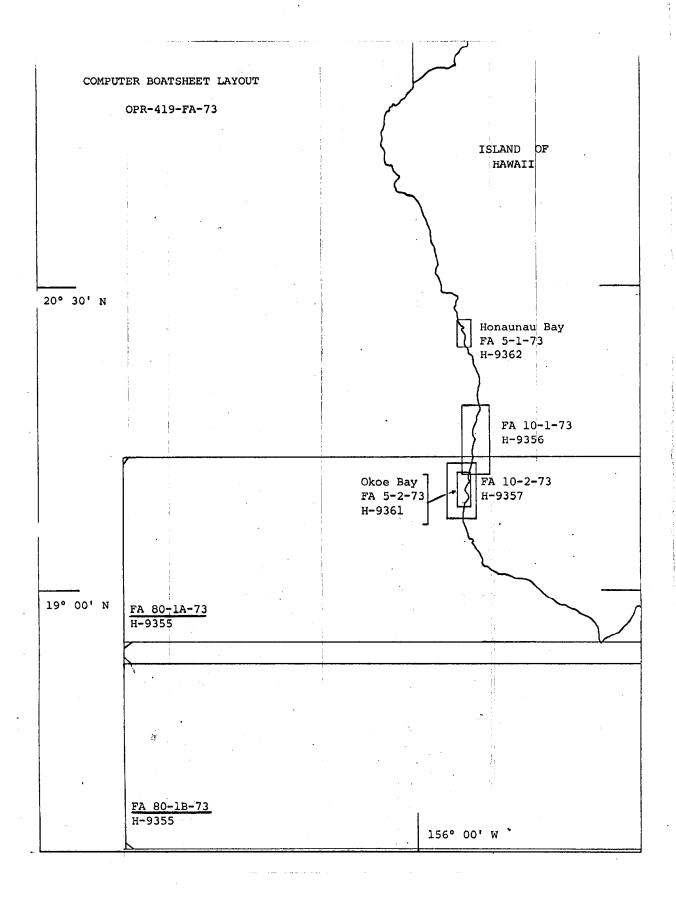
Lane Width - 45.315 meters

Parameter Tape FA80-1A-73

```
FEST=60000
CLAT=2050000
CMER=156/00/00
GRID=05/00
PLSCL=80000
PLAT=18/52/55
PLON=156/31/30
SILAT=19/24/03.58
SILON=155/54/47.77
S2LAT=18/54/58.77
S2LON=155/41/04.00
PLON=155/41/04.00
```

Parameter Tape FA80-1B-73

FEST=60000 CLAT=2050000 CMER=156/00/00 GRID=05/00 PLSCL=80000 FLAT=18/33/30 PLON=156/31/30 SILAT=19/24/03.58 SILON=155/54/47.77 S2LAT=18/54/58.77 /5° 54 56.570 S2LON=155/41/04.00 /55°4/ 04.290 Q=3306.45 VESNO=2020 YR=73



Total District

GEOGRAPHIC POSITIONS

Accession No. of Computation: G. 1119

Locality Island of Hawaii			ellawah blo kasteriterara		Sacond - Vorder Trie	ngulation. State	ata Huwa!1 /		
HOITATN	LATITUDE AND	Success in	ARIMUTH	NACK ABIMUTH	TO STATION	DISTANCE			
	200001002			 		LOGARITRE (METERS)	Mayring	Feer	
"um Panini (H.T.S. 1938), / 91,8 d.m. lev. 690.6 m.; 2266 ft.	19 47 15.583 155 51 11.500		343 00 39.14 50 02 19.78 83 18 43.43 171 24 10.53	163 00 58.23 238 00 50.11 263 15 29.05 351 24 03.83	You Waawaa West Kaupulehu Flow Kulli Anahulu	3.7hp h153 3.7hp h153 4.25 2677 3.564 6508 X	5,615,65 9,083,01 16,606,13 3,842,83	18,424.7 29,799.0 55,138.1 12,607.7	
Naicha, 1948 Riev. 455.3 m.; 1494ft. d.m.	19 38 10.275 155 57 07.910 N	315.9 \ 230.5 \	69 03 25.78 102 2h 58.66 102 55 2h.95	202 24 04.52 202 25 52.83	Kahale Kailua Kaanuolu roference murk no. 1	3.604 7313 3.601 7083 3.913 3016	4,024,68 4,805.16 8,190.34	15,204.3 A 15,764.9 A 26,871.1 A	
Lac c Kanoni (H.G.S.), 1684; r. 1913; r. 1926; r. 1948 d.m. Elev. 35.7 m.; 117 ft. (con- crete siab)	155 55 11.517	95.0 ×	150 55 49.14 160 16 29.23 197 19 14.71	330 55 11.75 310 16 16.66 17 19 10.22		3.828 5022 X 5.512 8593 7 3.874 9612	6.737.55 3,257.31 7,498.27	22,104.8 \ 10,686.7 \ 24,600.6 \	
Kahahawai (H.T.S.)(H.T.S. 1936), 1948 d.m. Eiev. 531.6 m.; 1744 ft.	19 07 119 1109 > 155 50 27 1499 >	1519.2 3 803.7	22 29 21.50 51 17 27.77 69 23 21.48	202 28 33.67 231 16 13.97 249 22 00.60	Kaune Point Light Kozoi Hannkesumae	14.018 5580 3.926 6610 3.867 0607	11,162.99 8,446.19 7,710.11	36,689.5 27,716.5 25,295.6	
Kn lee Z, 1948-1949, Elev. 11.1 m?; 36 ft. d.m.	18 54 56.570 S	1739.3 \ 125.5 \	125 OL 16.81 131 OL 12.02 175 O3 18.35	1311 02 32.00	Na Puu a Pole Puu Ki Umi's Abu	11.343 3073 14.191 0503 3.794 3443	22,014,66 15,521,95 6,228.00	72,325.5 50,934.8 20,633.0	
Palahemo (H.J.S.)(H.T.S. 1735), 1898; r. 1914; r. 1948 d.m. Elev. 53.3 m.; 175 ft. (con- crete platform)	1	1672.6	54 08 25.66 1145 54 47.74 214 42 09.62	241 07 50.39 325 54 11.48 34 42 20.84*	Ka lae 2 Umi's Ahu Kahuna	5.482 1644 5.727 9756 5.286 9216	3.035.01 1.936.67	9,957.5 X 17,537.2 X 6,351.9 X	
Pook 2 (H.T.S.), 1949, Elev. 399.3 m; 1310 ft. d.m.	155 34 30:759 X	852:3	332 28 R:33	137 RA 16:59	Camename New 1938) Elpaspae	14.122 26148 3.705 7598	·考:6新:48	17:275:8	
Stein 2 (H.T.S. 1938), 1949 lev. 193.3 m.; 634 ft. d.m.	19 03 48 898 A 155 34 45 337	1503.47 1325.58	190 50 55.72 231 13 48.66	10 51 00.52 51 15 50.63	Peak 2 (H.T.S.) Homehame New (H.T.S 1938)	\$:357 8071 6 :173 3472	2,279.75	7,479.5 N 48,902.5 N	
Fahela went base (H.T.S.), 1747 Blev. 36.7 m.; 120 ft.	19 09 LH.611 × 155 29 23.1CL ×	1371.6 7 675.1 N	98 h1 23.81 17h 2h 18.46 230 17 h3.35	278 39 34.25 354 24 05.45 50 18 49.94)	Kaiholena 2 Kahaha 2 Puu Uleule	7:373 9504 3:878 3878	9.861.67 11.839.34 7.694.62	32,354.5 X 38,842.9 X 25,244.8 X	
* •	1	1		1	1 - 1	1			

MERIDIAN 0 0.0

				LFILE CERTIFIED CORRECT FOR PLOTTING BY:	0 0 0 0 0 0 0	0 180 140 400.00 0.00	STATION STATION CENTER ANG. SECTOR ARC	
		Same		X 5				

	FILE CERTIFIED COF	CONTROL FOR: C09355 RECORD YR STA CAN NUMBER NUM CO
	2 75 444 139 307.00 .60 0 LAE L	CARTO LABEL VECTOR PLOT CODE ANGLE DISP. CODE 139 307.00 .60 0 KA LAE
	0A RM-1	111
	1884-48	NAME
	0.0	• STATION FREQUENCY HEIGHT (KHZ) 0.0 3306.45
	3306.45 19	
	24 3,580	LATITUDE *(S) 8 54 56,570
	19 24 3,580 155 54 47,770	LATITUDE LONGITUDE -(S) -(E) 18 54 56,570 155 41 4,290

Transmittal Sheet

The field work was examined daily under the supervision of this command. The boatsheet was inspected daily for completeness and additional work is considered necessary as indicated under section P. Recommendations. Although there were problems with ship's v sounding equipment as described under O. Miscellaneous, the data is considered adequate for offshore charting purposes.

C. A. Burroughs

CDR, NOAA

Cmdg. Ship FAIRWEATHER

APPROVAL SHEET

The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the Verifier's Report)

Examined and approved,

ames S. Green

Supervisory Cartographic Technician

Approved and forwarded,

Walter F. Forster, Cdr., NOAA Chief, Processing Division

Pacific Marine Center

U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific

Marine Center

Hourly heights are approved for

Form 362

Tide Station Used (NOAA Form 77-12): Milolii

.

Period:

February 23 - April 12, 1973

HYDROGRAPHIC SHEET:

H9355

OPR: 419

Locality: Southwest Coast of Hawaii Island

3.3 ft.

Plane of reference (mean lower low water): \$.8 ft. from 1400 hrs.

April 5 - 12

Height of Mean High Water above Plane of Reference is 1.7 ft.

Remarks: Zone direct on Milolii.

James R Hubbard For Chief, Tides Branch

Survey No.		7	/ /	73	' /	7.	, / ,		7	·
н-9355, 1973		330			[3] 8		Chree of	Ron Ling.		
	\or	/ iv ' c' / o'		S 1/4	of 5"/			25°	59.	/
Name on Survey	/: A	B	/c	0	E	/ F	G	, Н	/ _K	
HAWAII INLAN D						1====				<u> </u>
	 		 	<u> </u>						1
KAMAQA					<u> </u>					2.
PACIFIC OCEAN						ļ				3
KA LAR & D)									4
KANEWAA POINT										5
KALLAR (CONT) KANEWAA POINT KAUNA POINT							i ———	 		
LEGINITY OUR /	1				 	· · · · · ·			 .	6
			 					-		7
										8
				 		ļ				9
										10
										11
					 		•			12
							· ······			13
		<u> </u>			ļ					14
		·								15
										16
							-			
										17
										18
				. -						19
				***************************************	A	يتاظح	ved			20
					Ch		Has	unde	\ \	21
					St	PF G	*** ***	71		22
			***		29			hve.		
					-29	4 mly	1975			23
							·			24
					-					25
		· 								26
	.		.	1		1		7	I	, —·

U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HYDROGRAPHIC SURVEY STATISTICS HYDROGRAPHIC SURVEY NO. <u>H-9355</u>, 1973

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION SMOOTH SHEET & PNO			AMOUNT		RECORD DESCRIPTION BOAT SHEETS			AMOUNT
DESCRIPTION	DEPTH RECORDS	HORIZ.	CONT. ORDS	PRINT	routs	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES				1				
CAHIERS .	1 & P/0	D						
VOLUMES								
₹₹₹₹Bundle				750	00 0000	anath)		

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES The following statistics will be submitted with the cartographer's report on the survey

AMOUNTS PROCESSING ACTIVITY PRE-VERIFICATION REVIEW TOTALS VERIFICATION POSITIONS ON SHEET 310 POSITIONS CHECKED 3 31Ø 31Ø O POSITIONS REVISED 54 2 DEPTH SOUNDINGS REVISED 0 DEPTH SOUNDINGS ERRONEOUSLY SPACED SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED TIME (MANHOURS) 3 2 Verification of Control ı Verification of Positions 6 73 Verification of Soundings 24 Ð Smooth Sheet Compilation ALL OTHER WORK 10 1Ø5 TOTALS BEGINNING DATE ENDING DATE PRE-VERIFICATION BY 2/1/74 2/12/74 Nick Lestenkof, Cartographic Technician ENDING DATE BEGINNING DATE James 1. Stringham String 1/4/75 3/12/74 BEGINNING DATE ENDING DATE R. D. Sanocki August81975 5 August 1975

Ing D.J. Romesburg 10-8-75 8 hrs. 4-1-- (C- 7 (0- 3/4/7)

OPR-419 FA8Ø-1-73

This sheet was constructed and plotted at Pacific Marine Center, Seattle, Washington. Information relating to this will be noted under the heading by the number and letter as on the Verifier's Report, C&GS Form 946A.

PART II SHORELINE AND SIGNALS

4. There is no shoreline on 9355, 1973 survey. No manuscripts are required by this survey.

PART III JUNCTIONS See Review.

8. H-9355, 1973 joins H-9339, 1972 scale 1:80,000 to the north. Junction curves and soundings were not compared because of processing phase. The junction note was left in pencil. H-9355, 1973 joins H-9357, 1973 scale 1:10,000 at the northeast corner. H-9357, 1973 is an incomplete survey. Soundings and curves were not compared because of processing phase. The junction note was left in pencil.

PART VII CURVES

23. Depth curves were inspected by Mr. Arnold E. Eichelberger, Cartographic Technician.

PART X GENERAL

33. No bottom characteristic information was contained in raw data records.

PART XI NOTES TO THE REVIEWER

36. See ships report Raydist note. Station KA LAE 2 1948-1949 geographic position used for smooth sheet H-9355, 1973 was taken from geographic positions Old Hawaiian Datum Card 27. (copy furnished with this report) NOAA Ship FAIRWEATHER stated in H-9355, 1973 report and in Season's Report "The (green) station was located at South Point, latitude 18°54'58.772"N and longitude 155°41'Ø3.996"W over traingulation station KA LAE 2, 1948." Smooth sheet H-9355, 1973 used the following latitude 18°54'56.570"N longitude 155°41'Ø4.290"W for triangulation station KA LAE 2, 1948-1949.

The fathogram trace is very difficult to read in many areas. Several soundings were changed during verification, resulting disagreements between smooth sheet and boatsheet.

Hydrography sounding line spacing is very wide making it difficult to draw accurate depth curves. Brown depth curves were used to delineate least depth soundings.

No tide corrections were used for H-9355, 1973 soundings because of the depth of water. Velocity corrections values were extrapolated beyond 2000 fathoms with program AM 530 and the PDP 8/e computer.

Penciled depth curves and geographic names were not fixed with Krylon Matte finish to enable the reviewer to make changes as necessary.

Respectfully submitted,

James L. Stringham

Cartographic Technician

H-9355
Items for Future Presurvey Reviews

The bottom is considered adequately developed for present charting purposes on the present survey. New charting need not warrant extra development on future surveys in this area.

Position Lat.	Index Long.	Bottom Change Index	Use Index	Resurvey Cycle (Years)
183 184 185 190 183 184 185 190 183 184 185	1562 1562 1562 1562 1561 1561 1561 1560 1560	0 0 0 0 0 0	0 0 0 0 0 0 0	50 50 50 50 50 50 50 50 50
190	1560	0	1	50

OFFICE OF MARINE SURVEYS AND MAPS

MARINE CHART DIVISION

MODIFIED HYDROGRAPHIC SURVEY REVIEW

<u>REGISTRY NO.</u> H-9355 <u>FIELD NO</u> . FA-80-1-73
Hawaii, Southwest Coast - Island of Hawaii, West of Ka Lae
SURVEYED: March 27-April 11, 1973
<u>SCALE</u> : 1:80,000 <u>PROJECT NO</u> : OPR 419
SOUNDINGS: EDO 333A Fathometer CONTROL: Raydist (Range-Range)
Chief of Party Surveyed by A D Anderson F B Arbusto T E Defoor R D Hopkins F L Jeffries J A Murphy D E Nortrup R C Pate A J Potok F P Rossi K H Underwood W A Wert
Automated Plot by PMC Xynetic Plotter Verified by J. L. Stringham Reviewed by R. D. Sanocki Date: August 13, 1975 Inspected by D. J. Romesburg

1. Control and Shoreline

The origin of the control is adequately described in Section F of the Descriptive Report.

This is an offshore survey and no shoreline is shown on the smooth sheet.

2. Hydrography

- A. Depths at crossings are in adequate agreement.
- B. The usual depth curves were adequately delineated. Supplemental curves have been added to better define the bottom configuration and to correspond with the charted curves.

C. The development of the bottom configuration and investigation of least depths are considered adequate for present charting purposes.

Condition of Survey

The survey records, automated plotting, Descriptive Report, and verification are adequate and conform to the requirements of the Hydrographic Manual and the Instruction Manual-Automated Hydrographic Surveys except as follows:

- A. An incorrect position for the "green" electronic control station was used during field operations. The correct position and plotting on the smooth sheet was made during verification of the survey.
- B. The graphic records were poorly scanned. Some differences between the boat sheet and final smooth plotted soundings were as great as 10 percent of the recorded depths. Indications of strong side echos were not always considered in determining least depths of bottom features. It was apparent by notations on the graphic records that the value of the base line on the trace was poorly monitored and not always entered during each change of phase. Other problems relating to the sounding equipment are noted in Section 0 of the Descriptive Report.
- C. It is questionable whether the line spacing on this survey is sufficient to provide adequate data for bathymetric maps and the construction of 1:80,000 scale navigation charts as required in Section 1.2 of the Project Instructions.
- D. Distortion ticks were not plotted on the smooth sheet.
 - E. No bottom samples were taken in the survey area.
- 4. Junctions after considerable changes were made to the present smooth sheet. See the Quality Control Report for H-9813 for additional information. RWD 8/81 An adequate junction was effected with H-9339(1972) on the north. The junction with H-9357(1973) on the northeast will be discussed in the review of that survey. There are no contemporary surveys which junction with the present survey on the west, east, or south; however, present survey depths are in harmony with charted depths in these areas. An adequate junction made with H-9801(1919) and H-9357(1973) on the

H-4655a(1927) 1:247,000 (reconnaissance)

This reconnaissance survey covers a small northeast portion of the present survey and offers little basis for comparison

with the present survey. Depths within the common area are considered superseded by the present survey.

Comparison with Charts 4102, 25th Ed., March 30, 1974 4115, 10th Ed., October 13, 1973

Hydrography Α.

The charted hydrography originates with U.S. Navy Trackline Surveys (Bp-33911 and 33912), U.S. Navy Bathymetric Survey (Bp-64266), the previously discussed prior survey, and depths from an undetermined source prior to 1911.

The present survey is adequate to supersede the charted hydrography within the common area.

Aids to Navigation

There are no aids to navigation within the area of the present survey.

Compliance with Instructions

The survey adequately complies with the Project Instructions except as noted in Section 3c of this review and Section L of the Descriptive Report.

Additional Field Work

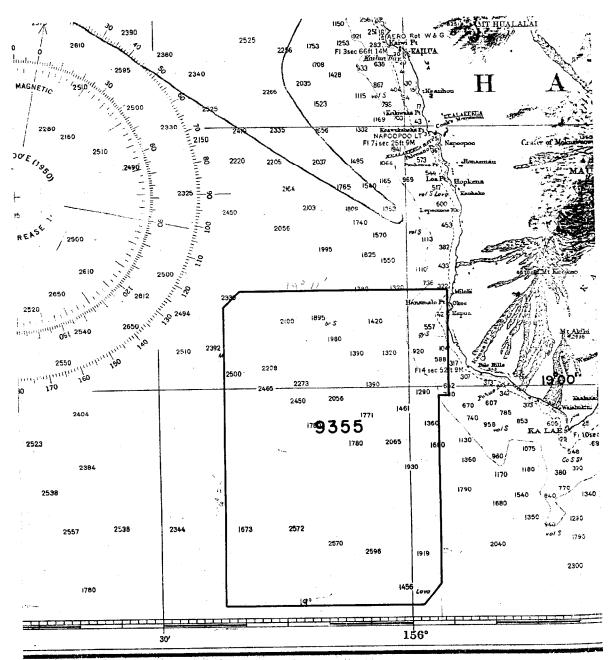
This is considered to be a basic survey and is adequate for present charting purposes. Additional field work that split the present sounding line spacing would be desirable to provide adequate new data for the bathymetric maps and the construction of new 1:80,000 scale navigation charts mentioned in Paragraph 1.2 of the Project Instructions.

Examined and Approved:

R & Houlety Marine Chart Division

Associate Director Office of Marine Surveys

and Maps



LIGHTS, BEACONS, BUOYS, AND FOR INFORMATION RECEIVED

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO.

INSTRUCTIONS

à basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.

2. In "Remarks" column cross out words that do not apply.

3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
1115	4/14/75	C.S. Forbes	FILL Part Before After Verification Review Inspection Signed Via
	1111		Drawing No. Exam for AM correction only - no correct.
			Appd soundings to holiday area for
1000	4/14/75	C.S. Forkes	Pul Part Before After Verification Review Inspection Signed Via
005	41412	<u> </u>	Drawing No. Fram for N/ corrections andy no corrections
			Revised 2000 Fm curve and a pod add then Sounding
1102	11/10/75	C.S. Forbes	Revised 2000 fm curve and appl add hend sounding r Ruth Part Before After Verification Review Inspection Signed Via
11-7-	777	C.O. V. Or Des	Drawing No. Appd Soundings to holiday areas thru chart
			4/15
001	11/10/25	C.S. Forbes	Part Before After Verification Review Inspection Signed Via
001	7/12/19	C.5.7 01 // Ca	Drawing No. Revised 2000 Fm curve and applied several soundings
			to holiday areas (appl thru chart 4179)
179	4/21/25	C.S. Forbes	Part Before After Verification Review Inspection Signed Via
117	1/01/15	23.7000	Drawing No. Appl soundings to holiday areas thru chart
· · · · · · · · · · · · · · · · · · ·	ļ		41102 and directly from survey
	0/0/20	V	Pall Part Before After Verification Review Inspection Signed Via
4000	7/7/ /3	Kanis	Drawing No. Examined report for entral
	 		1
	5/1-/		Full Part Before After-Verification Review Propertion Signed Via
4179	9//3/75	HAUS MAN	Drawing No. Examined No corr.
			Exam. Descriptive report) Entr Part Detort After Verification Review Inspection Signed Via
9000	8-16-76	9. Baile	
			Drawing No. Examined. No corr.
	11/-/-/	- 17	Enll Part Before After Verification Review Inspection Signed Via
4001	11/12/14	D.J. Kinnin	
	ļ		Drawing No. 10 From Examined additional solys
	<u> </u>		added and deleted Fel Part Beine After Verification Review Inspection Signed Via
4000	9-21-77	M. Soger	
	ļ		Drawing No. 15. Revised 2000 fm curve & revised
			Sdys Thru Chart 4001 Drug # 10
4115	1/19/18	m.J. Friese	Fully app'd after Inspection & Synature
		0	consider byetro fully appoid throughout common area
4001	2/11/80	Mr. Seger	Fully applied ofter Inspection & Significe to Drug 1
		7	Thru char F# 4115
540	2/21/80	Sager	Fully applied to Drug ! K Thru Chart 4115 AFTER
	1		Inspection & Signature
19004	3/28/80	Stembel	Fully applied thru 19320 (4115) (Signed)
		EDES ALL EDITIONS OF F	ORM C&GS-975. USCOMM-DC 8558-P63

(410Z)